



# STIC Search Report

EIC 1700

STIC Database Tracking Number: 102835

**TO:** Tamra Dicus  
**Location:**  
Art Unit : 1774  
September 4, 2003

**Case Serial Number:** 10/070110

**From:** John Calve  
**Location:** EIC 1700  
CP3/4-3D62  
**Phone:** 308-4139

**John.Calve@uspto.gov**

Search Notes

## SEARCH REQUEST FORM

## Scientific and Technical Information Center

Requester's Full Name: TAMRA DICUS Examiner #: 79110 Date: 9/2/03  
 Art Unit: 1274 Phone Number 305-3809 Serial Number: 10/070710  
 Mail Box and Bldg/Room Location: CB1/B2B Results Format Preferred (circle):  PAPER DISK  E-MAIL  
77pb2a

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: SEE Attachment - B1B  
 Inventors (please provide full names): SEE Attachment - B1B

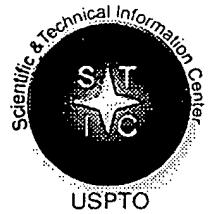
Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

I'd like to find any layer, paper, or composition that has the formula of claim 8. The process of making it is in claim 6. I'd need that as well. Thanks.

\*\*\*\*\*  
**STAFF USE ONLY**  
 Searcher: Calme  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: 9/3/03  
 Date Completed: 9/4/03  
 Searcher Prep & Review Time: 120  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 120

Type of Search	Vendors and cost where applicable
NA Sequence (#)	STN _____
AA Sequence (#)	Dialog _____
Structure (#)	Questel/Orbit _____
Bibliographic	Dr. Link _____
Litigation	Lexis/Nexis _____
Fulltext	Sequence Systems _____
Patent Family	WWW/Internet _____
Other	Other (specify) _____



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact **the EIC searcher or contact:**

**Kathleen Fuller, EIC 1700 Team Leader  
308-4290, CP3/4-3D62**

## **Voluntary Results Feedback Form**

➤ *I am an examiner in Workgroup:*  *Example: 1713*  
➤ *Relevant prior art found, search results used as follows:*

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- Foreign Patent(s)
- Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention.

**Comments:**

**Drop off or send completed forms to STIC/EIC1700 CP3/4 3D62**



=> file hca

FILE 'HCA' ENTERED AT 09:22:47 ON 04 SEP 2003  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
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FILE COVERS 1907 - 28 Aug 2003 VOL 139 ISS 10  
FILE LAST UPDATED: 28 Aug 2003 (20030828/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d his nofile

(FILE 'HOME' ENTERED AT 08:23:13 ON 04 SEP 2003)

FILE 'HCA' ENTERED AT 08:23:32 ON 04 SEP 2003  
L1 14546 SEA ABB=ON PLU=ON NISHIDA ?/AU  
L2 6415 SEA ABB=ON PLU=ON ENOMOTO ?/AU  
L3 11872 SEA ABB=ON PLU=ON KOMATSU ?/AU  
L4 1 SEA ABB=ON PLU=ON L1 AND L2 AND L3 AND INK? ← *Applicants*  
SEL L4 RN

FILE 'REGISTRY' ENTERED AT 08:24:57 ON 04 SEP 2003  
\*\*\*\*\*  
Tamra,

The author's or applicants record had 4 compounds indexed for claim 1. Alumina, potassium and sodium oxide, and ammonium oxide. Chem. abstracts indexed the compounds that went into making the alumina particle.

\*\*\*\*\*  
L5 4 SEA ABB=ON PLU=ON (12136-45-7/BI OR 12161-77-2/BI OR  
1313-59-3/BI OR 1344-28-1/BI)  
D SCAN  
L6 2 SEA ABB=ON PLU=ON L5 AND (SODIUM# OR POTASSIUM#)  
L7 2 SEA ABB=ON PLU=ON L5 NOT L6  
L8 1 SEA ABB=ON PLU=ON L7 AND ALUMINUM#  
L9 1 SEA ABB=ON PLU=ON L7 NOT L8  
D SCAN  
E LITHIUM OXIDE/CN

L10 1 SEA ABB=ON PLU=ON "LITHIUM OXIDE"/CN  
 E RUBIDIUM OXIDE/CN  
 L11 1 SEA ABB=ON PLU=ON "RUBIDIUM OXIDE"/CN  
 E CESIUM OXIDE/CN  
 L12 1 SEA ABB=ON PLU=ON "CESIUM OXIDE"/CN  
 E FRANCIUM OXIDE/CN  
 L13 1 SEA ABB=ON PLU=ON "FRANCIUM OXIDE"/CN  
 L14 6 SEA ABB=ON PLU=ON L6 OR L10 OR L11 OR L12 OR L13

FILE 'HCA' ENTERED AT 08:29:59 ON 04 SEP 2003  
 L15 213053 SEA ABB=ON PLU=ON L8 (alumina)

\*\*\*\*\*  
 TAMRA, there are only 33 records (L16) in chemical abstracts where the ammonium oxide is indexed. Since I obtained so few hits, I also searched the process of claims L49-L84 to try to obtain relevant art.

\*\*\*\*\*

L16 33 SEA ABB=ON PLU=ON L9  
 L17 32538 SEA ABB=ON PLU=ON L14 (Na and K oxide)

FILE 'LCA' ENTERED AT 08:30:20 ON 04 SEP 2003  
 L18 91 SEA ABB=ON PLU=ON (LITHIUM# OR LI OR SODIUM# OR NA OR POTASSIUM# OR K OR RUBIDIUM# OR RB OR CESIUM# OR CS OR FRANCIUM# OR FR) (A)OXIDE##  
 L19 45 SEA ABB=ON PLU=ON (AMMONIA# OR AMMONIUM# OR NH4 OR NH3) (2A)OXIDE OR NH4 (W)O  
 L20 1181 SEA ABB=ON PLU=ON ALUMINA# OR (ALUMINUM OR AL) (A)OXIDE# OR AL2O3

FILE 'HCA' ENTERED AT 08:33:26 ON 04 SEP 2003  
 L21 451238 SEA ABB=ON PLU=ON L15 OR L20 OR ALUMINA#  
 L22 9686 SEA ABB=ON PLU=ON L9 OR L19  
 L23 58038 SEA ABB=ON PLU=ON L18 OR L17  
 L24 200 SEA ABB=ON PLU=ON L21 AND L22 AND L23  
 L25 200 SEA ABB=ON PLU=ON L4 OR L24  
 D SCAN L4  
 L26 318969 SEA ABB=ON PLU=ON ALUMIN?/TI  
 L27 28 SEA ABB=ON PLU=ON L25 AND L26  
 L28 QUE ABB=ON PLU=ON PARTICL? OR MICROPARTICL? OR PARTICULAT? OR DUST? OR GRIT? OR GRAIN# OR GRANUL? OR POWDER? OR SOOT? OR SMUT? OR FINES# OR PRILL? OR FLAKE# OR PELLET? OR BB#  
 L29 33036 SEA ABB=ON PLU=ON L21(2A)L28  
 L30 8 SEA ABB=ON PLU=ON L25 AND L29  
 D SCAN  
 L31 8 SEA ABB=ON PLU=ON L30 OR L4  
 D SCAN L4  
 L32 109333 SEA ABB=ON PLU=ON L21(2A)USES  
 L33 160 SEA ABB=ON PLU=ON L22(2A)USES  
 L34 13194 SEA ABB=ON PLU=ON L23(2A)USE##  
 L35 4568 SEA ABB=ON PLU=ON L32 AND L34  
 L36 7 SEA ABB=ON PLU=ON L35 AND L33  
 D SCAN  
 L37 8 SEA ABB=ON PLU=ON L31 NOT L36  
 L38 30394 SEA ABB=ON PLU=ON INK?(A)JET? OR INKJET? OR INK?(A)PRINT?  
 L39 1 SEA ABB=ON PLU=ON L25 AND L38  
 L40 16 SEA ABB=ON PLU=ON L22 AND L38  
 L41 1 SEA ABB=ON PLU=ON L40 AND L32

L42 1 SEA ABB=ON PLU=ON L40 AND L21  
 L43 2 SEA ABB=ON PLU=ON L40 AND L23  
 L44 1 SEA ABB=ON PLU=ON L16 AND L38  
 L45 9 SEA ABB=ON PLU=ON L36 OR L39 OR L41 OR L42 OR L43 OR L44  
 L46 7 SEA ABB=ON PLU=ON L37 NOT L45  
 L47 10 SEA ABB=ON PLU=ON L16 AND (L21 OR L23)

FILE 'LCA' ENTERED AT 08:49:12 ON 04 SEP 2003  
 L48 11545 SEA ABB=ON PLU=ON (GEL## OR SOL## OR SOLGEL## OR HYDROGEL#  
 OR HYDRO#(W)GEL# OR SOL#(A)GEL#)

FILE 'REGISTRY' ENTERED AT 08:54:48 ON 04 SEP 2003  
 L49 2 SEA ABB=ON PLU=ON SODIUM ALUMINATE/CN  
 L50 1 SEA ABB=ON PLU=ON POTASSIUM ALUMINATE/CN  
 E LITHIUM ALUMINATE/CN  
 L51 1 SEA ABB=ON PLU=ON "LITHIUM ALUMINATE"/CN  
 E RUBIDIUM ALUMINATE/CN  
 L52 1 SEA ABB=ON PLU=ON "RUBIDIUM ALUMINATE"/CN  
 E CESIUM ALUMINATE/CN  
 L53 1 SEA ABB=ON PLU=ON "CESIUM ALUMINATE"/CN

FILE 'HCA' ENTERED AT 09:05:46 ON 04 SEP 2003  
 L54 7081 SEA ABB=ON PLU=ON L49 OR L50 OR L51 OR L52 OR L53  
 L55 10782 SEA ABB=ON PLU=ON (LITHIUM# OR LI OR SODIUM# OR NA OR  
 POTASSIUM# OR K OR RUBIDIUM# OR RB OR CESIUM# OR CS OR  
 FRANCIUM# OR FR) (2A) ALUMINATE#  
 L56 13193 SEA ABB=ON PLU=ON L54 OR L55  
 L57 183434 SEA ABB=ON PLU=ON NEUTRALI?  
 L58 42 SEA ABB=ON PLU=ON L56 (2A) L57  
 L59 4015307 SEA ABB=ON PLU=ON (GEL## OR SOL## OR SOLGEL## OR HYDROGEL#  
 OR HYDRO#(W)GEL# OR SOL#(A)GEL#)  
 L60 30 SEA ABB=ON PLU=ON L58 AND L59  
 L61 QUE ABB=ON PLU=ON PRODUC? OR PROD# OR GENERAT? OR MANUF? OR  
 MFR# OR CREAT? OR FORM## OR FORMING# OR FORMAT? OR MAKE# OR  
 MADE# OR MAKIN# OR FABRICAT? OR SYNTHESI? OR PREPAR? OR PREP#  
 L62 29 SEA ABB=ON PLU=ON L61 AND L60  
 L63 21 SEA ABB=ON PLU=ON (L60 OR L62) AND (L21 OR L22 OR L23)  
 L64 20737 SEA ABB=ON PLU=ON L21 (2A) L59  
 L65 6 SEA ABB=ON PLU=ON L60 AND L64  
 L66 21 SEA ABB=ON PLU=ON L63 OR L65  
 L67 15 SEA ABB=ON PLU=ON L66 NOT L65  
 D SCAN L65  
 D QUE STAT L55  
 L68 6 SEA ABB=ON PLU=ON L65 AND L55  
 L69 15 SEA ABB=ON PLU=ON L67 AND L55  
 L70 180010 SEA ABB=ON PLU=ON 49/SX, SC  
 L71 10 SEA ABB=ON PLU=ON L69 AND L70  
 L72 5 SEA ABB=ON PLU=ON L68 AND L70  
 D SCAN  
 L73 1005056 SEA ABB=ON PLU=ON COLOR? OR COLOUR? OR DYE? OR PIGMENT? OR  
 STAIN? OR PAINT? OR CHROMA# OR CHROMOGEN? OR CHROMOPHOR? OR  
 TINCT? OR TINT?  
 L74 2 SEA ABB=ON PLU=ON L71 AND L73  
 L75 0 SEA ABB=ON PLU=ON L72 AND L73  
 L76 10 SEA ABB=ON PLU=ON L71 OR L74  
 D SCAN L74  
 L77 QUE ABB=ON PLU=ON FILM? OR THIN FILM? OR LAYER? OR OVERLAY?  
 OR OVERLAID? OR LAMIN? OR LAMEL? OR MULTILAYER? OR SHEET? OR  
 LEAF? OR FOIL? OR COAT? OR TOPCOAT? OR OVERCOAT? OR VENEER? OR  
 SHEATH? OR COVER? OR ENVELOP? OR ENCASE? OR ENWRAP? OR

## OVERSPREAD?

L78	0 SEA ABB=ON	PLU=ON	L72 AND L77
L79	3 SEA ABB=ON	PLU=ON	L76 AND L77
L80	10 SEA ABB=ON	PLU=ON	L76 OR L79
L81	2 SEA ABB=ON	PLU=ON	L62 AND L73
L82	2 SEA ABB=ON	PLU=ON	L62 AND L73
L83	3 SEA ABB=ON	PLU=ON	L62 AND L77
L84	6 SEA ABB=ON	PLU=ON	L66 NOT (L80 OR L72)

FILE 'HCA' ENTERED AT 09:22:47 ON 04 SEP 2003

=> d L45 1-9 cbib abs hitind hitrn

L45 ANSWER 1 OF 9 HCA COPYRIGHT 2003 ACS on STN

137:326671 **Jet inks** with good ejection stability, storage stability, and water resistance, containers for them, and method and apparatus for jet printing using them. Onishi, Yasuharu; Endo, Hiroyuki; Ueki, Hiroyuki (Fuji Xerox Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002317132 A2 20021031, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-119955 20010418.

AB The inks comprise colorants, org. solvents, surfactants, and additives, which increase pH of pure H<sub>2</sub>O at concn. of .gtoreq.1%. Optical densities of printed images from the inks of this invention (ODB) and inks without the additives (ODA) after immersing in H<sub>2</sub>O satisfy the relationship of ODB/ODA .gtoreq.1.05. Thus, an ink comprising Reactive Yellow 51, polyethylene glycol, glycerin, nonionic surfactants, H<sub>2</sub>O, and Na<sub>2</sub>CO<sub>3</sub> was manufd.

IC ICM C09D011-00

ICS B41J002-01; B41M005-00

CC 42-12 (Coatings, Inks, and Related Products)

ST **jet ink** sodium carbonate storage stability; ejection stability **jet printing ink**; pH increase additive

**jet ink** waterproofing

IT **Ink-jet** printers

**Ink-jet** printing

(**jet inks** contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT Water-resistant materials

(**jet-printing inks**; **jet inks**

contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT **Inks**

(**jet-printing**, anticlogging, storage-stable; **jet inks** contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT **Inks**

(**jet-printing**, water-resistant; **jet inks**

contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT Polyoxyalkylenes, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(solvent; **jet inks** contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT 62-54-4, Calcium acetate 62-76-0, Sodium oxalate 75-04-7, Ethylamine, uses 100-71-0, 2-Ethylpyridine 102-71-6, Triethanolamine, uses 108-89-4, 4-Methylpyridine 109-06-8, 2-Methylpyridine 109-89-7, Diethylamine, uses 110-86-1, Pyridine, uses 111-42-2, Diethanolamine, uses 121-44-8, Triethylamine, uses 126-96-5 127-08-2, Potassium acetate 127-09-3, Sodium acetate 127-95-7, Potassium hydrogen oxalate 141-43-5, Monoethanolamine, uses 142-72-3, Magnesium acetate 144-55-8,

Sodium bicarbonate, uses 298-14-6 471-34-1, Calcium carbonate, uses 497-19-8, Sodium carbonate, uses 506-87-6, Ammonium carbonate 536-78-7, 3-Ethylpyridine 546-89-4, Lithium acetate 546-93-0, Magnesium carbonate 547-66-0, Magnesium oxalate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 563-72-4 584-08-7, Potassium carbonate 631-61-8, Ammonium acetate 694-56-4 1066-33-7, Ammonium hydrogencarbonate 1113-38-8, Ammonium oxalate 1186-49-8, Sodium hydrogen oxalate 1305-62-0, Calcium hydroxide, uses 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, uses 1330-43-4, Sodium tetraborate 1332-77-0, Potassium tetraborate 1336-21-6, Ammonium hydroxide 1628-89-3, 2-Methoxypyridine 4251-29-0, Potassium hydrogen acetate 5006-97-3, Lithium hydrogencarbonate 5972-72-5, Ammonium hydrogen oxalate 7558-79-4, Disodium hydrogen phosphate 7558-80-7, Sodium dihydrogen phosphate 7601-54-9, Trisodium phosphate 7722-76-1, Ammonium dihydrogen phosphate 7757-86-0, Magnesium hydrogen phosphate 7757-87-1 7758-11-4, Dipotassium hydrogen phosphate 7758-23-8, Calcium dihydrogen phosphate 7758-87-4, Tricalcium phosphate 7775-19-1, Sodium metaborate 7778-53-2, Tripotassium phosphate 7778-77-0, Potassium dihydrogen phosphate 10043-22-8, Potassium oxalate 10361-65-6, Ammonium phosphate 10377-52-3, Trilithium phosphate 11128-29-3, Potassium pentaborate 12007-58-8, **Ammonium boron oxide ((NH4)2B4O7)** 12007-60-2, Lithium tetraborate 12007-89-5, **Ammonium boron oxide ((NH4)B5O8)** 12007-92-0, Sodium pentaborate 12008-41-2, Boron **sodium oxide** (B8Na2O13) 12229-52-6, Boron **potassium oxide** (B6K4O11) 12229-55-9, Boron **sodium oxide** (B6Na4O11) 12429-66-2, Boron magnesium oxide (B6MgO10) 13092-66-5, Magnesium dihydrogen phosphate 13453-69-5, Lithium metaborate 13453-80-0, Lithium dihydrogen phosphate 13703-82-7, Magnesium metaborate 13709-94-9, Potassium metaborate 15302-96-2, 1-Ethylpyridinium 25007-86-7 32446-62-1 34370-18-8, Lithium pentaborate 52458-41-0, Ammonium metaborate 58567-85-4, Lithium hydrogen oxalate 70984-28-0, Ammonium borate ((NH4)2B8O13) 77617-77-7 142261-32-3, Magnesium borate oxide (Mg3(BO2)4O) 473711-69-2, Magnesium borate oxide (Mg5(BO2)4O3) RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(jet inks contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT 4399-55-7, Direct Blue 71 12225-30-8, Reactive Black 12 12225-49-9, C.I. Reactive Blue 32 12239-43-9, C.I. Reactive Red 14 61969-33-3, C.I. Reactive Yellow 51

RL: TEM (Technical or engineered material use); USES (Uses)

(jet inks contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

IT 56-81-5, Glycerin, uses 57-55-6, Propylene glycol, uses 107-21-1, Ethylene glycol, uses 111-46-6, Diethylene glycol, uses 112-34-5, Diethylene glycol monobutyl ether 143-22-6, Triethylene glycol monobutyl ether 25322-68-3, Polyethylene glycol

RL: TEM (Technical or engineered material use); USES (Uses)

(solvent; jet inks contg. pH-increasing additives with good ejection stability, storage stability, and water resistance)

L45 ANSWER 2 OF 9 HCA COPYRIGHT 2003 ACS on STN

134:210111 Novel **alumina** hydrate particles and their dispersion sol for liquid coating in forming **ink**-receiving layer and substrate having **ink**-receiving layer. **Nishida, Hiroyasu**;

**Enomoto, Naoyuki; Komatsu, Michio** (Catalysts & Chemicals Industries Co., Ltd., Japan). PCT Int. Appl. WO 2001016026 A1 20010308, 36 pp. DESIGNATED STATES: W: JP, KR, US; RW: DE, FR, GB. (Japanese).

CODEN: PIXXD2. APPLICATION: WO 2000-JP5334 20000809. PRIORITY: JP 1999-245496 19990831.

AB **Alumina** hydrate particles have a compn. represented by the formula:  $xM2O.y(NH4)20.Al2O3.zH2O$ , wherein  $2 \times 10^{-4} \leq x \leq 10^{-2.5}$ ,  $0.1 \times 10^{-4} \leq y \leq 10^{-2.0} \times 10^{-4}$ ,  $0.6 \leq z \leq 2.5$ , and M is an alkali metal, having an av. particle diam. of  $0.02-0.2 \mu m$  and a total pore vol.  $0.5-1.5 \text{ mL/g}$  provided that the total pore vol. of the pores having a pore diam. of  $15-30 \text{ nm}$  is  $0.3-1.0 \text{ mL/g}$ . The **alumina** hydrate particles having a greater pore vol. together with a specific range of pore diam., and a high-concn. dispersion sol exhibits a low viscosity and high transparency. The **alumina** hydrate particles can be used for forming an **ink**-receiving layer which provides high stability of dyes, rapid absorption and a large absorption vol. for an **ink**, and no occurrence of bleeding.

IC ICM C01F007-00  
ICS B41J002-01

CC 49-5 (Industrial Inorganic Chemicals)  
Section cross-reference(s): 42

ST **alumina** hydrate particle dispersion sol coating; **ink** receiving **alumina** hydrate layer substrate

IT Ink-jet printers

Inks

(**alumina** hydrate particles and their dispersion sol for liq. coating in forming **ink**-receiving layer)

IT 1313-59-3, Sodium oxide, uses  
1344-28-1, Alumina, uses 12136-45-7,  
Potassium oxide, uses 12161-77-2,  
Ammonium oxide (NH4)20  
RL: MOA (Modifier or additive use); USES (Uses)

(**alumina** hydrate particles and their dispersion sol for liq. coating in forming **ink**-receiving layer)

IT 1313-59-3, Sodium oxide, uses  
1344-28-1, Alumina, uses 12136-45-7,  
Potassium oxide, uses 12161-77-2,  
Ammonium oxide (NH4)20  
RL: MOA (Modifier or additive use); USES (Uses)

(**alumina** hydrate particles and their dispersion sol for liq. coating in forming **ink**-receiving layer)

L45 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS on STN

132:6667 Ammonia Synthesis over a Multipromoted Iron Catalyst: Extended Set of Activity Measurements, Microkinetic Model, and Hydrogen Inhibition. Sehested, Jens; Jacobsen, Claus J. H.; Tornqvist, Eric; Rokni, Said; Stoltze, Per (Haldor Topsoe Research Laboratories, Lyngby, DK-2800, Den.). Journal of Catalysis, 188(1), 83-89 (English) 1999. CODEN: JCTLA5. ISSN: 0021-9517. Publisher: Academic Press.

AB The ammonia synthesis activity of a multipromoted iron catalyst (KM1R, Haldor Topsoe A/S) is reported for a wide range of conditions. The H2:N2 ratio is varied by a factor of 10, the total pressures are between 1 and 100 bar, and temps. are in the range 320-440.degree.C. Data obtained here and literature data are compared. It is concluded that water poisoning is negligible in the present activity measurements and that hydrogen inhibition is important at the combined conditions of low temp., low ammonia partial pressure, and high total pressure. From a fit to the activity data a microkinetic model is obtained, which has H\* and N\* as surface species. The equil. const. of hydrogen adsorption obtained from single crystal studies,  $2.16 \times 10^3 \text{ bar}^{0.5} \exp(-48 \text{ kJ mol}^{-1} \text{ R}^{-1} \text{ T}^{-1})$ , is used as input for the model. The obtained model parameters are the rate const. at zero coverage,  $7.79 \text{ mmol g}^{-1} \text{ s}^{-1} \text{ bar}^{-1} \exp(-6.6 \text{ kJ mol}^{-1} \text{ R}^{-1} \text{ T}^{-1})$

and the equil. const. for the equil. between ammonia, hydrogen, and adsorbed nitrogen,  $0.027 \text{ bar} \cdot 0.5 \exp(-27.1 \text{ kJ mol}^{-1} \text{ R}^{-1} \text{ T}^{-1})$ . From these two parameters a rate of  $1.43 \cdot 10^{12} \text{ s}^{-1} \exp(-162.4 \text{ kJ mol}^{-1} \text{ R}^{-1} \text{ T}^{-1})$  for nitrogen desorption is inferred. The performance of the model is compared to three microkinetic models found in the literature. The model gives a quant. account of the catalytic activity at all the measured degrees of conversions, pressures, and temps. and is consistent with surface science data. (c) 1999 Academic Press.

CC 67-3 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
 Section cross-reference(s): 49

IT 1305-78-8, Calcium **oxide**, uses 1344-28-1,  
**Alumina**, uses 7439-89-6, Iron, uses 12136-45-7  
**Potassium oxide**, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (ammonia synthesis over multipromoted iron catalyst and extended set of activity measurements, microkinetic model, and hydrogen inhibition)

IT 1344-28-1, **Alumina**, uses 12136-45-7,  
**Potassium oxide**, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (ammonia synthesis over multipromoted iron catalyst and extended set of activity measurements, microkinetic model, and hydrogen inhibition)

L45 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS on STN

132:6635 Ammonia synthesis over multi-promoted iron catalysts obtained by high-energy ball-milling. Jacobsen, Claus J. H.; Jiang, Jianzhong; Morup, Steen; Clausen, Bjerne S.; Topsoe, Henrik (Haldor Topsoe Research Laboratories, Lyngby, DK-2800, Den.). Catalysis Letters, 61(3,4), 115-120 (English) 1999. CODEN: CALEER. ISSN: 1011-372X. Publisher: Baltzer Science Publishers.

AB The feasibility of producing ammonia synthesis catalysts from high-energy ball-milling of a simple mixt. of the constituent oxides has been investigated. The effect of ball-milling the fused oxidic precursor of the industrial KM1 ammonia synthesis catalyst has also been studied. The results show that high-energy ball-milling offers some interesting possibilities for prep. novel catalytic materials. It is obsd. that ball-milling of the powder oxides mixt. leads to formation of solid solns. and the catalytic activity is significantly higher than that of the starting material. Furthermore, ball-milling of fused oxidic KM1 precursor is seen to give rise to more homogeneous promoter distribution and slightly higher activity. The quite small activity increase obsd. in this case probably reflects the fact that the fusion process has already resulted in a close to optimal promoter distribution. The choice of atm. during ball-milling is also seen to offer possibilities for regulating the phase compn.

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
 Section cross-reference(s): 49

IT **Oxides (inorganic)**, uses  
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);  
 PROC (Process); USES (Uses)

(ammonia synthesis over multi-promoted iron catalysts obtained by high-energy ball-milling)

IT 1305-78-8, Calcium **oxide**, uses 1309-37-1, Iron **oxide**(fe<sub>2</sub>o<sub>3</sub>), uses 1309-48-4, Magnesia, uses 1344-28-1, **Alumina**, uses 1345-25-1, Iron **oxide**(feo), uses 7439-89-6, Iron, uses 11113-52-3, Calcium ferrite 12136-45-7, **Potassium oxide**, uses 136363-78-5, Topsoe KM 1  
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);

PROC (Process); USES (Uses)

(ammonia synthesis over multi-promoted iron catalysts obtained by high-energy ball-milling)

IT 1344-28-1, **Alumina, uses 12136-45-7,**

**Potassium oxide, uses**

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);

PROC (Process); USES (Uses)

(ammonia synthesis over multi-promoted iron catalysts obtained by high-energy ball-milling)

L45 ANSWER 5 OF 9 HCA COPYRIGHT 2003 ACS on STN

129:247215 Ammonia synthesis catalyst replacement. Tandon, K. M. (Shriram Fertilisers and Chemicals, Kota, India). Fertiliser News, 43(6), 67-72 (English) 1998. CODEN: FENEAQ. ISSN: 0015-0266. Publisher: Fertiliser Association of India.

AB Ammonia synthesis catalyst is a reduced iron catalyst which in its reduced form is extremely pyrophoric due to its well developed pore structure. Replacement of this catalyst involves discharge of the catalyst under nitrogen atm. The task was particularly difficult due to the limited access owing to the small dimensions of the converter. This paper gives details of the replacement carried out at SFC in Apr. 1998, the difficulties faced and the solns. evolved.

CC 49-8 (Industrial Inorganic Chemicals)

Section cross-reference(s): 19, 67

IT 1305-78-8, **Calcia, uses 1317-61-9, Iron oxide Fe3O4,**

**uses 1344-28-1, Alumina, uses**

**12136-45-7, Dipotassium oxide, uses**

RL: CAT (Catalyst use); USES (Uses)

(ammonia synthesis catalyst replacement)

IT 1344-28-1, **Alumina, uses 12136-45-7,**

**Dipotassium oxide, uses**

RL: CAT (Catalyst use); USES (Uses)

(ammonia synthesis catalyst replacement)

L45 ANSWER 6 OF 9 HCA COPYRIGHT 2003 ACS on STN

125:17791 Removal of ammonia from waste gases by contacting with decomposition catalysts. Iida, Kozo; Nojima, Shigeru; Tokuyama, Rie (Mitsubishi Heavy Ind Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08089758 A2 19960409 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-229219 19940926.

AB NH3 is removed from waste gases by contacting with decompn. catalyst contg. .gtoreq.1 Pt-group metals on cryst. silicate supports having a general formula of (1.+-0.8)R2O.cndot.[am2O3.cndot.bAl2O3].cndot.cR'O. cndot.ySiO2 (R is H<sup>+</sup> and/or alkali metal ions; M is .gtoreq.1 element of Group VIII, rare earth metals, Ti, Pd, Cr, Nb, Sn, Ga; R' is .gtoreq.1 alk. earth metals; a .gtoreq.0, b .gtoreq.0, c .gtoreq.0, but a + b =1, y/c >12, y >12) and having x-ray diffraction pattern.

IC ICM B01D053-86

ICS B01D053-58; B01J029-04; B01J029-87; B01J029-88; B01J029-89

CC 59-2 (Air Pollution and Industrial Hygiene)

IT 1314-23-4, **Zirconium oxide, uses 1344-28-1,**

**Aluminum oxide, uses 7440-06-4, Platinum,**

**uses 13463-67-7, Titanium oxide, uses**

RL: CAT (Catalyst use); USES (Uses)

(ammonia decompn. catalyst for waste gases)

IT 1304-28-5, **Barium oxide, uses 1305-78-8, Calcium oxide, uses**

**1308-04-9, Cobalt sesquioxide 1308-38-9, Chromium sesquioxide, uses**

**1309-37-1, Iron sesquioxide, uses 1309-48-4, Magnesium oxide, uses**

**1309-64-4, Antimony sesquioxide, uses 1312-81-8, Lanthanum sesquioxide**

**1313-59-3, Sodium oxide, uses**

**1314-11-0, Strontium oxide, uses 1314-34-7, Vanadium sesquioxide**

1345-13-7, Cerium sesquioxide 12024-21-4, Gallium oxide (Ga2O3)  
12036-35-0, Rhodium sesquioxide 12059-63-1, Niobium sesquioxide  
12060-06-9, Ruthenium oxide (Ru2O3)  
RL: CAT (Catalyst use); USES (Uses)

(silicate component; ammonia decompn. catalyst for waste gases)

IT 1344-28-1, Aluminum oxide, uses

RL: CAT (Catalyst use); USES (Uses)

(ammonia decompn. catalyst for waste gases)

IT 1313-59-3, Sodium oxide, uses

RL: CAT (Catalyst use); USES (Uses)

(silicate component; ammonia decompn. catalyst for waste gases)

L45 ANSWER 7 OF 9 HCA COPYRIGHT 2003 ACS on STN

119:216302 Solid proton conductors as room-temperature gas sensors. Kleperis, J.; Vaivars, G.; Bajars, G.; Kranevskis, A.; Lusis, A.; Vitins, G. (Institute of Solid State Physics of University of Latvia, 8 Kengaraga Street, Riga-63, LV-1063, Latvia). Sensors and Actuators, B: Chemical, 13(1-3), 269-71 (English) 1993. CODEN: SABCEB. ISSN: 0925-4005.

AB NH3-exchanged ceramic samples of beta alumina were obtained from plasma-dispersed powders. The ionic cond. is slightly affected by ion exchange, but the surface cond. for the ammonia-exchanged sample drastically changes in the presence of the H2O and NH3 vapors. The NH3-doped xerogel of antimonic acid hydrate as a thick film was tested as a potentiometric NH3 sensor.

CC 79-2 (Inorganic Analytical Chemistry)

Section cross-reference(s): 57

IT 1313-59-3, Sodium oxide, uses

1344-28-1, Alumina, uses 12057-24-8,

Lithium oxide, uses

RL: USES (Uses)

(ammonia-exchanged ceramic samples prep'd. from, as solid proton conductors in room-temp. gas sensors)

IT 1313-59-3, Sodium oxide, uses

1344-28-1, Alumina, uses 12057-24-8,

Lithium oxide, uses

RL: USES (Uses)

(ammonia-exchanged ceramic samples prep'd. from, as solid proton conductors in room-temp. gas sensors)

L45 ANSWER 8 OF 9 HCA COPYRIGHT 2003 ACS on STN

117:220891 A thermal stability study of the magnetite-based ammonia synthesis catalyst. Aleksic, Bojana D.; Radic, Nenad D.; Mitov, I.; Radakovic, Aleksandra A.; Mitrovski, Svetlana M. (Inst. Catal. Chem. Eng., IChTM, Belgrade, YU-11000, Yugoslavia). Journal of the Serbian Chemical Society, 57(7), 433-42 (English) 1992. CODEN: JSCSEN. ISSN: 0352-5139.

AB The thermal stability of the ammonia synthesis catalyst prep'd. by melting natural magnetite with promoters was estd. on the basis of the changes obsd. by measuring its activity, total sp. surface area, the sp. surface area of the iron and the alk. promoters, in addn. to the phase compn. before and after thermal treatment of the catalyst at temps. of 600-750.degree. for 5-20 h. The appropriate exptl. conditions for the detn. of the thermal stability of the synthesized catalyst were defined. Changes in the textural and structural properties of the catalyst obsd. in the course of thermal treatment were not sufficiently pronounced to be taken as criteria for the assessment of the thermal stability of melted ammonia synthesis catalysts. The ratio of the ammonia synthesis reaction rate consts. detd. after and before thermal treatment of the samples represents the thermal stability factor. This ratio showed that the thermal stability of the synthesized catalyst was considerably better than the generally used com. catalyst.

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
Section cross-reference(s): 49  
IT 1309-38-2P, Magnetite, **uses**  
RL: CAT (Catalyst use); PREP (Preparation); USES (Uses)  
(catalysts, oxide-promoted, for ammonia synthesis,  
effect of thermal treatment temp. on structure and activity of)  
IT 1305-78-8, Calcium oxide, uses 1309-48-4, Magnesia, uses  
1344-28-1, Alumina, **uses** 12136-45-7,  
Potassium oxide, **uses**  
RL: USES (Uses)  
(magnetite catalyst promoted by, thermal stability in relation to)  
IT 1344-28-1, Alumina, **uses** 12136-45-7,  
Potassium oxide, **uses**  
RL: USES (Uses)  
(magnetite catalyst promoted by, thermal stability in relation to)

L45 ANSWER 9 OF 9 HCA COPYRIGHT 2003 ACS on STN

116:68440 Process for producing the precursor of a precipitated catalyst for ammonia synthesis. Montino, Franco; Balducci, Luigi; Ferrero, Francesco; Pernicone, Nicola (Ministero dell' Universita'e della Ricerca Scientifica e Tecnologica, Italy). Eur. Pat. Appl. EP 459424 A1 19911204, 12 pp.  
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE.  
(English). CODEN: EPXXDW. APPLICATION: EP 1991-108740 19910528.  
PRIORITY: IT 1990-20455 19900529.

AB This process produces the precursor of a ptd. catalyst for NH<sub>3</sub> synthesis, based on Fe, Al, Co and K oxides, and comprises (a) prepg. an aq. soln. of water-sol. compds. of Fe, Al, and Co, Fe being present as a water-sol. ferrous salt of an org. acid, and causing, by addn. of an alk. pptg. soln., the co-pptn. of the corresponding Fe, Al, and Co hydroxides, which still contain the Fe in ferrous form; (b) oxidizing the hydroxide suspension prepd. according to (a) until the ratio of divalent Fe to trivalent Fe ranges from 0.20-0.50; and (c) conducting an alk. doping operation with a K compd. and heating the resulting mixt. in an inert atm. to .gtoreq.850.degree..

IC ICM B01J023-78

ICS B01J035-10; C01C001-04

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 49

IT 1332-37-2, Iron oxide, **uses** 1344-28-1,  
Aluminum oxide, **uses** 11104-61-3, Cobalt  
oxide 12136-45-7, Potassium oxide,  
**uses**  
RL: USES (Uses)  
(ammonia synthesis catalyst contg.)  
IT 1344-28-1, Aluminum oxide, **uses**  
12136-45-7, Potassium oxide, **uses**  
RL: USES (Uses)  
(ammonia synthesis catalyst contg.)

=> d L46 1-7 cbib abs hitind hitrn

L46 ANSWER 1 OF 7 HCA COPYRIGHT 2003 ACS on STN

115:58163 Preparation of cobalt-molybdenum catalyst for carbon monoxide conversion. Chen, Jinsong; Hua, Nanping; et al. (Hubei Chemical Institute, Peop. Rep. China). Faming Zhanli Shenqing Gongkai Shuomingshu CN 1042482 A 19900530, 5 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1989-108457 19891107.

AB A S-resistant Co-Mo catalyst for CO conversion is prepd. by soaking spherical carrier **particles**, such as Al<sub>2</sub>O<sub>3</sub>

**particles**, in an NH4OH soln. contg. NH4 molybdate, a sol. Co salt selected from the group consisting of Co(NO3)2, CoCl2, Co(AcO)2, and Co(HCO2)2, and an alkali metal (Na, K, or Cs) nitrate, carbonate, or acetate and drying at room temp. or under the sun. The catalyst thus prepd. comprises CoO 3-7, MoO3 15-22, and an alkali metal oxide 5-20% and the prepn. method does not require high-temp. baking and sintering, thus avoiding the formation of undesirable Co2O3.

IC ICM B01J023-78  
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
IT 1313-59-3, Sodium oxide, uses and  
miscellaneous 12136-45-7, Potassium oxide,  
uses and miscellaneous 20281-00-9, Cesium  
oxide  
RL: USES (Uses)  
(cobalt oxide-molybdenum oxide carbon monoxide conversion catalysts  
contg., for synthesis of ammonia)  
IT 630-08-0, Carbon monoxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(conversion of, in synthesis of ammonia, cobalt oxide  
-molybdenum oxide catalyst contg. alkali metal oxides for)  
IT 1313-59-3, Sodium oxide, uses and  
miscellaneous 12136-45-7, Potassium oxide,  
uses and miscellaneous 20281-00-9, Cesium  
oxide  
RL: USES (Uses)  
(cobalt oxide-molybdenum oxide carbon monoxide conversion catalysts  
contg., for synthesis of ammonia)

L46 ANSWER 2 OF 7 HCA COPYRIGHT 2003 ACS on STN  
97:223905 Metal oxide catalyst composition. Topham, Susan Ann (Imperial Chemical Industries PLC, UK). Eur. Pat. Appl. EP 60622 A1 19820922, 12 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1982-300749 19820215. PRIORITY: GB 1981-8409 19810318.

AB A metal oxide catalyst compn. is in the form of particles having at least 1 face formed by solidification of a melt in contact with a surface and preferably having at least 1 channelled surface whereby the pressure drop through a bed of such particles is limited. The particles are made preferably by casting the melt and fracturing the resulting layer. Such a compn. comprising Fe oxide is a precursor for an NH3-synthesis catalyst. E.g., a mixt. of finely **powd.** compn. of Al2O3 2.4, CaO 1.4, K2O 1.0, SiO2 0.4, and Fe3O4 94.8% by wt. was melted at 1600.degree. and the melt cast in corrugated trays. The corrugations were 2mm deep and 7mm wide, sep'd. by 1mm. The solidified layer was crushed and sieved, and the particles were dried by SiO2 chips and used as catalyst in the reaction of 3:1 H2:N2 at 475.degree.. The catalyst activity is 6-7% higher than that of com. catalysts.

IC B01J037-00; B01J023-74; C01C001-04  
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)  
Section cross-reference(s): 48

ST metal oxide catalyst ammonia synthesis; iron  
oxide ammonia synthesis catalyst

IT Particle size  
(of oxide catalysts, for ammonia synthesis, for low  
pressure drop)

IT Catalysts and Catalysis  
(oxide, granulated, for ammonia synthesis, with low-  
pressure drop)

IT 1305-78-8, uses and miscellaneous 12136-45-7, uses and  
miscellaneous

RL: CAT (Catalyst use); USES (Uses)  
(catalysts from iron **oxide** contg., for **ammonia**  
synthesis)

IT 12136-45-7, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)  
(catalysts from iron **oxide** contg., for **ammonia**  
synthesis)

L46 ANSWER 3 OF 7 HCA COPYRIGHT 2003 ACS on STN

96:39622 Effect of the starting **aluminum oxide** and of the  
method of preparation on the characteristics of lithium-stabilized  
.beta. "-**aluminum oxide** ceramics. Kvachkov, R.;  
Yanakiev, A.; Puliev, Kh.; Balkanov, I.; Yankulov, P. D.; Budevski, E.  
(Cent. Lab. Electrochem. Power Sour., Sofia, 1040, Belg.). Journal of  
Materials Science, 16(10), 2710-16 (English) 1981. CODEN: JMTSAS. ISSN:  
0022-2461.

AB The influence of the morphol. and particle size of various types of  
**Al2O3** materials on the synthesis and characteristics of  
Li-stabilized .beta. "-**alumina** ceramics were investigated. The  
use of highly dispersed oxides results in higher densities in the fired  
ceramic bodies owing to their higher reactivity. In the case of  
**oxides** obtained from **NH4** alum, the degree of dispersion  
and the reactivity may be increased by raising the amt. of .gamma.-  
**Al2O3** up to a certain limit. **Al2O3** prepd. from  
**Al2(OH)5NO3** by slurry spray-drying also gave satisfactory results despite  
its lower degree of dispersion. This was connected with the morphol. of  
the particles. In the case of synthesized materials contg. an  
insufficient amt. of .beta.-**alumina**-**NaAlO2** eutectic, high  
densities were also achieved by applying a 2-step firing schedule at  
temps. above the m.p. of the eutectic.

CC 57-2 (Ceramics)

ST beta **alumina** synthesis property; **lithium oxide**  
beta **alumina** ceramic; **particle size beta**  
**alumina** synthesis

IT **Particle size**  
(of **alumina**, synthesis and properties of lithium-modified  
.beta.-**alumina** ceramics in relation to)

IT Batteries, secondary.  
(sodium-sulfur, lithium-modified .beta.-**alumina** electrolytes  
for, synthesis and properties of, **alumina particle**  
size and morphol. in relation to)

IT Ceramic materials and wares  
(.beta.-**alumina**, lithium-modified, synthesis and properties  
of, **alumina particle** size and morphol. in relation  
to)

IT 11138-49-1P

RL: PREP (Preparation); USES (Uses)  
(ceramics, lithium-modified, synthesis and properties of,  
**alumina particle** size and morphol. in relation to)

IT 1344-28-1P, properties

RL: PRP (Properties); PREP (Preparation)  
(morphol. and particle size and source of, synthesis and properties of  
lithium-modified .beta.-**alumina** ceramics in relation to)

IT 1344-28-1P, properties

RL: PRP (Properties); PREP (Preparation)  
(morphol. and particle size and source of, synthesis and properties of  
lithium-modified .beta.-**alumina** ceramics in relation to)

L46 ANSWER 4 OF 7 HCA COPYRIGHT 2003 ACS on STN

84:170182 Study of the catalytic properties of supported iron catalysts in an

ammonia synthesis reaction. Komarov, V. S.; Rabina, P. D.; Efros, M. D.; Dmitrenko, L. M.; Ivanova, R. F.; Kuznetsov, L. D.; Repina, N. S.; Chopik, S. I.; Anisimova, M. I. (Inst. Obshch. Neorg. Khim., Minsk, USSR). Vestsi Akademii Navuk BSSR, Seryya Khimichnykh Navuk (1), 10-13 (Russian) 1976. CODEN: VBSKAK. ISSN: 0002-3590.

AB The catalytic activity of NH<sub>3</sub>-synthesis catalysts, prepd. by a treatment of oxide supports by Fe nitrate solns., was studied as a function of support properties. Fine **powder Al<sub>2</sub>O<sub>3</sub>** pretreated at 1000.degree., Al<sub>2</sub>O<sub>3</sub> prepd. by baking Al hydroxide at 500.degree., and ZrO<sub>2</sub>.3CaO.Al<sub>2</sub>O<sub>3</sub> were used as supports (I, II, and III, resp.). Catalytic activity decreased with support in the order III > I > II. This is also the order of decreasing acidity. A treatment of the catalysts with K<sub>2</sub>O promoted catalytic activity, esp. that of III-supported catalyst.

CC 67-2 (Catalysis and Reaction Kinetics)

ST **oxide** support **ammonia** catalytic synthesis; support effect ammonia catalyst activity; iron ammonia catalyst support

IT 12136-45-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(promoter, for supported iron catalysts for ammonia synthesis)

IT 12136-45-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(promoter, for supported iron catalysts for ammonia synthesis)

L46 ANSWER 5 OF 7 HCA COPYRIGHT 2003 ACS on STN

77:38548 Refractory binder and compositions. Dreyling, Alfred P.; Dreyling, Lewis J. (Quibley Company, Inc.). Brit. GB 1269857 19720406, 6 pp. (English). CODEN: BRXXAA. APPLICATION: GB 1969-53064 19691029.

AB Binders for granular refractories, such as Al<sub>2</sub>O<sub>3</sub>, MgO, ZrO<sub>2</sub>, zircon, mullite, and Cr ore, provided 25-200 min setting times of the moist refractory mixts. without heating to a hard strong mass with little shrinkage. The binders consisted of an aq. mixt. of Na silicate with 0.5-5 times its wt. of NH<sub>4</sub>B<sub>5</sub>O<sub>8</sub>.-4H<sub>2</sub>O. The refractory contg. the quick-setting binder (2-15 wt. %) was used as patching materials on a furnace lining. A preferred silicate was DuPont No. 6 having a SiO<sub>2</sub> Na<sub>2</sub>O ratio of 2, but ratios of 0.2-5 are suitable. The wet mixts. were allowed to set; the setting time increased from .apprx.2 min with a ratio of 5 to .apprx.17 with a ratio of 0.2, whereas with no borate, or no silicate, there was no set in 70 min. When MgO trowelling mixes contg. 10 wt. % H<sub>2</sub>O were bonded with these mixts. the setting time varied from 25 min when the silicate-borate ratio was 0.4, to 72 min when it was 1.25. When an Al<sub>2</sub>O<sub>3</sub> grain was mixed with silicate 1.5, borate 2.5, and H<sub>2</sub>O 13 wt. % and molded as a 50 lb block, the setting time was 3.5 hr compared to 12-14 hr when the binder was 4% silicate or 4% borate; and when fired at 2950.degree.F the shrinkage was <1%.

IC C04B

CC 57-5 (Ceramics)

IT Refractories

(aluminum oxide, sodium silicate-  
ammonium pentaborate binders for)

L46 ANSWER 6 OF 7 HCA COPYRIGHT 2003 ACS on STN

71:129207 Kinetic study and electric conductivity of some industrial catalysts used in the synthesis of ammonia. Nicolescu, Ioan V.; Spinzi, M.; Spinzi, Antoaneta Revistade Chimie (Bucharest, Romania), 20(6), 337-43 (Romanian) 1969. CODEN: RCBUAU. ISSN: 0034-7752.

AB An exptl. study was carried out on the elec. cond. of the industrial catalyst BASF-K3-10 and on the synthetic catalyst obtained by pelletizing a mixt. of Fe<sub>2</sub>O<sub>3</sub>, FeO, Fe<sub>3</sub>O<sub>4</sub> + (Al<sub>2</sub>O<sub>3</sub>-K<sub>2</sub>O) powders, followed by sintering at 1300.degree.. An attempt was also made to

establish a connection between the kinetics of the chem. process and the apparent activation energy of the elec. cond. of the catalyst in the case of H and N adsorption.

CC 67 (Catalysis and Reaction Kinetics)  
IT Catalysts  
    (iron **oxide**, for **ammonia** manuf., elec. cond. of)  
IT Activation energy of electric conduction  
    Electric conductivity  
        (of iron **oxide** catalysts, for **ammonia** manuf.)  
IT 1309-37-1, properties 1317-61-9 12136-45-7  
RL: PRP (Properties)  
    (elec. cond. of)  
IT 12136-45-7  
RL: PRP (Properties)  
    (elec. cond. of)

L46 ANSWER 7 OF 7 HCA COPYRIGHT 2003 ACS on STN

46:12707 Original Reference No. 46:2245g-h Catalysts for synthesis of ammonia II. Examination of the catalysts in current use and a procedure of preparing a good catalyst. Shima, Goro; Uchida, Hiroshi (Govt. Chem. Ind. Research Inst., Tokyo). Repts. Govt. Chem. Ind. Research Inst. Tokyo, 45, 369-77 (English) 1950.

AB In testing 4 Japanese and 2 German com. Fe2O3-**Al2O3** catalysts in synthesizing NH3 from N and H (1:3) gases at 350-550.degree./50 kg./sq. cm. and at 700.degree./atm. the catalytic activity was lowered by impurities and imperfect diffusion of the promoters. A catalyst prep'd. from **powd.** Fe2O3 and **Al2O3** by thoroughly mixing, sintering into porous rods in a stream of H, and after adding aq. KNO3, burning in O was highly catalytic and thermostable.

CC 18 (Acids, Alkalies, Salts, and Other Heavy Chemicals)

IT Lime  
    (effect on catalyst from **Al2O3** and Fe2O3 for NH3 synthesis)

IT FeO, Fe2O3  
    FeO, Fe2O3  
    (catalysts from **Al2O3** and, in NH3 synthesis)

IT Potassium oxides, K2O7  
    (effect on catalysts from **Al2O3** and Fe2O3 for NH3 synthesis)

IT 1344-28-1, Alumina  
    (catalysts from Fe **oxides** and, in NH3 synthesis)

IT 1309-48-4, Magnesia  
    (effect on catalyst from **Al2O3** and Fe2O3 for NH3 synthesis)

IT 1344-28-1, Alumina  
    (catalysts from Fe **oxides** and, in NH3 synthesis)

=> d L80 1-10 cbib abs hitind hitrn

L80 ANSWER 1 OF 10 HCA COPYRIGHT 2003 ACS on STN

139:119325 Preparation of pseudo-boehmite and .gamma.-**Al2O3**  
support by neutralization of NaAlO2 solution with CO2. Yang, Qinghe; Liu, Bin; Li, Dadong; Shi, Yahua; Nie, Hong; Kang, Xiaohong (Research Institute of Petroleum Processing, SINOPEC, Beijing, 100083, Peop. Rep. China). China Petroleum Processing and Petrochemical Technology (1), 47-51 (English) 2003. CODEN: CPPTFS. ISSN: 1008-6234. Publisher: China Petroleum Processing and Petrochemical Technology Press.

AB Pseudo-boehmite (PB) and .gamma.-**Al2O3** support are **prep'd**. by neutralization of NaAlO2 **soln.** with CO2 (mixed gases) on bench scale. PB, typically loosely packed, fibrous particle/aggregate, is obtained by adjusting concn. and flow rate of CO2 and concn. of NaAlO2 **soln.** at a pH level lower than that commonly assumed during

neutralization. After calcination at different temps., .gamma.-  
Al<sub>2</sub>O<sub>3</sub> supports with different pore vol. and different pore size  
are **prepd.** at different conditions.

CC 49-4 (Industrial Inorganic Chemicals)

ST pseudoboehmite alumina neutralization sodium  
aluminate carbon dioxide

IT Catalyst supports  
Neutralization  
(**prepn.** of pseudo-boehmite and alumina support by  
neutralization of sodium aluminate  
soln. with carbon dioxide)

IT 24623-77-6P, Aluminum hydroxide oxide (Al(OH)<sub>3</sub>)  
RL: PNU (Preparation, unclassified); PREP (Preparation)  
(boehmite-type, pseudo; **prepn.** of pseudo-boehmite and  
alumina support by **neutralization** of sodium  
aluminate soln. with carbon dioxide)

IT 124-38-9, Carbon dioxide, processes 1302-42-7, Sodium  
aluminate (NaAlO<sub>2</sub>)  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(**prepn.** of pseudo-boehmite and alumina support by  
neutralization of sodium aluminate  
soln. with carbon dioxide)

IT 1344-28-1P, Alumina, preparation  
RL: PNU (Preparation, unclassified); PREP (Preparation)  
(**prepn.** of pseudo-boehmite and alumina support by  
neutralization of sodium aluminate  
soln. with carbon dioxide)

IT 1344-28-1P, Alumina, preparation  
RL: PNU (Preparation, unclassified); PREP (Preparation)  
(**prepn.** of pseudo-boehmite and alumina support by  
neutralization of sodium aluminate  
soln. with carbon dioxide)

L80 ANSWER 2 OF 10 HCA COPYRIGHT 2003 ACS on STN

130:141400 Studies of aging during neutralization of NaAlO<sub>2</sub> solution by CO<sub>2</sub>  
for preparation of pseudo-boehmite. Yang, Qinghe; Li, Dadong;  
Zhuang, Fucheng; Shi, Yahua; Kang, Xiaohong (Res. Inst. Petroleum  
Processing, Beijing, 100083, Peop. Rep. China). Shiyou Xuebao, Shiyou  
Jiagong, 14(4), 24-29 (Chinese) 1998. CODEN: SXSHEY. ISSN: 1001-8719.  
Publisher: Zhongguo Shihua Chubanshe.

AB During neutralization of NaAlO<sub>2</sub> soln. by CO<sub>2</sub> for **prepn.**  
. of pseudo-boehmite, the effect of aging variables, including medium, pH,  
temp., time, pressure etc. upon the properties of pseudo-boehmite was  
studied. The possibility of pseudo-boehmite transforming into .beta.1-  
Al<sub>2</sub>O<sub>3</sub>.3H<sub>2</sub>O and .beta.1-Al<sub>2</sub>O<sub>3</sub>.3H<sub>2</sub>O turning into  
pseudo-boehmite during aging was discussed.

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)  
Section cross-reference(s): 49, 67

ST sodium aluminate neutralization carbon  
dioxide pseudoboehmite; alumina petroleum refining catalyst

IT Petroleum refining catalysts  
(aging during neutralization of NaAlO<sub>2</sub> soln. by CO<sub>2</sub> for  
**prepn.** of pseudo-boehmite)

IT 1344-28-1P, Alumina, uses  
RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(aging during neutralization of NaAlO<sub>2</sub> soln. by CO<sub>2</sub> for  
**prepn.** of pseudo-boehmite)

IT 1302-42-7P 12428-54-5P, Boehmite (Al<sub>2</sub>O<sub>3</sub>.H<sub>2</sub>O)

21645-51-2P, Aluminum hydroxide (Al(OH)3), uses  
RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)

(aging during **neutralization** of sodium  
aluminate soln. by CO2 for prep. of  
pseudo-boehmite)

IT 1344-28-1P, Alumina, uses

RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(aging during neutralization of NaAlO2 soln. by CO2 for  
prep. of pseudo-boehmite)

IT 1302-42-7P

RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP  
(Preparation); USES (Uses)  
(aging during **neutralization** of sodium  
aluminate soln. by CO2 for prep. of  
pseudo-boehmite)

L80 ANSWER 3 OF 10 HCA COPYRIGHT 2003 ACS on STN

124:121325 Weathering-resistant titanium dioxide **pigments**. Ishida,  
Kuniteru; Fukumoto, Hiroshi; Yamamoto, Tsutomu (Sakai Chemical Industry  
Co, Japan). Jpn. Kokai Tokkyo Koho JP 07292277 A2 19951107 Heisei, 4 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-126697 19940428.

AB The title **pigments**, useful for **coatings**, plastics,  
etc., contain 1-6% (as SiO2) Si oxides, 0.1-3% (as SnO2) Sn oxides, 0.1-5%  
(as ZrO2) Zr oxides, and 1-5% (as Al2O3) on the surface of  
81-97.8% substrates comprising rutile-type TiO2 contg. 0.1-2% (as  
Al2O3) Al compds. or 0.1-5% (as Al2O3 and ZrO2) Al  
compds. and Zr compds. Thus, meta-titanic acid was treated with aq.  
Al2(SO4)3 soln., roasted, treated with Na silicate soln  
. H2SO4, aq. NaOH soln., SnCl2 soln., Zr(SO4)2  
soln., and Na aluminate soln., then  
neutralized to give weathering-resistant pigment compn.

IC ICM C09C001-36

CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 37, 42

ST titania **alumina pigment** weathering resistance; silica  
zirconia stabilizer titania **pigment**; tin oxide stabilizer  
titania **pigment**; plastic **coating** titania  
**pigment** stabilizer

IT **Coating** materials

Heat stabilizers

Light stabilizers

(weathering-resistant titania **pigments** coated with  
metal oxides for plastics and **coatings**)

IT Plastics

RL: MSC (Miscellaneous)

(weathering-resistant titania **pigments** coated with  
metal oxides for plastics and **coatings**)

IT 13463-67-7P, Titania, **preparation**

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or  
engineered material use); PREP (Preparation); USES (Uses)  
(rutile-type; weathering-resistant titania **pigments**  
coated with metal oxides for plastics and **coatings**)

IT 1314-23-4, Zirconium oxide (ZrO2), uses 1344-28-1,  
Alumina, uses 7631-86-9, Silica, uses 18282-10-5, Tin oxide  
(SnO2)

RL: MOA (Modifier or additive use); USES (Uses)

(weathering-resistant titania **pigments** coated with  
metal oxides for plastics and **coatings**)

IT **1344-28-1, Alumina, uses**  
RL: MOA (Modifier or additive use); USES (Uses)  
(weathering-resistant titania **pigments coated** with  
metal oxides for plastics and **coatings**)

L80 ANSWER 4 OF 10 HCA COPYRIGHT 2003 ACS on STN  
124:121324 Light-resistant titanium dioxide **pigments**. Ishida,  
Kuniteru; Fukumoto, Hiroshi; Oohira, Hiroya (Sakai Chemical Industry Co,  
Japan). Jpn. Kokai Tokkyo Koho JP 07292276 A2 19951107 Heisei, 3 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-126696 19940428.

AB The title **pigments**, useful for plastics, etc., comprise 90-98.8%  
rutile-type TiO<sub>2</sub> as a substrate, where 0.1-5% (as ZrO<sub>2</sub>) Zr oxides, 0.1-3%  
(as Sb<sub>2</sub>O<sub>5</sub>) Sb oxide hydrates, 1-5% (as Al<sub>2</sub>O<sub>3</sub>) Al  
oxide hydrates, and 0.1-2% (as F) F- exist on the surface of the  
substrate. Thus, meta-titanic acid was treated with aq. Zr carbonate  
**soln.**, roasted at 900.degree., treated with aq. SbCl<sub>5</sub> **soln**  
. aq. NH<sub>4</sub>F **soln.**, and **Na aluminate**, then  
**neutralized** to give light-resistant **pigment** compn.

IC ICM C09C001-36

CC **49-3** (Industrial Inorganic Chemicals)

Section cross-reference(s): 37

ST **alumina** fluoride stabilizer titania **pigment**; antimony  
oxide stabilizer titania **pigment**; light stabilizer titania  
**pigment** zirconia

IT Light stabilizers

(light-resistant titania **pigment coated** with metal  
oxides and fluorides for plastics)

IT Fluorides, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(light-resistant titania **pigment coated** with metal  
oxides and fluorides for plastics)

IT Plastics

RL: MSC (Miscellaneous)  
(light-resistant titania **pigment coated** with metal  
oxides and fluorides for plastics)

IT 1309-64-4, Antimony trioxide, uses 1314-23-4, Zirconium oxide, uses  
**1344-28-1, Aluminum oxide**, uses 16984-48-8,

Fluoride, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(light-resistant titania **pigment coated** with metal  
oxides and fluorides for plastics)

IT 13463-67-7P, Titania, **preparation**

RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or  
engineered material use); PREP (Preparation); USES (Uses)  
(rutile-type; light-resistant titania **pigment coated**  
with metal oxides and fluorides for plastics)

IT **1344-28-1, Aluminum oxide**, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(light-resistant titania **pigment coated** with metal  
oxides and fluorides for plastics)

L80 ANSWER 5 OF 10 HCA COPYRIGHT 2003 ACS on STN

108:43396 **Preparation of sodium aluminate** blocks  
for acidic wastewater treatment. Hatton, William (Laporte Industries  
Ltd., UK). Brit. UK Pat. Appl. GB 2188312 A1 19870930, 4 pp. (English).  
CODEN: BAXXDU. APPLICATION: GB 1987-5470 19870309. PRIORITY: GB  
1986-7563 19860326.

AB Industrial acidic wastewater is **neutralized** with **Na**  
**aluminate** blocks **prep**. by concn., molding, seeding, and  
crysnt. An aq. **Na aluminate** **soln.** contg.

10-25% Na<sub>2</sub>O and 15-30% **Al<sub>2</sub>O<sub>3</sub>** is concd. close to the spontaneous crystn. point until reaching 130-135.degree. b.p., and the concd. **soln.** is molded and seeded with **Na aluminate** particles (diam. .gtoreq.1 mm, .gtoreq.75%) contg. .gtoreq.40% Na<sub>2</sub>O and/or .gtoreq.50% **Al<sub>2</sub>O<sub>3</sub>** over the cooled surface of the molded **Na aluminate** to avoid unduly fast crystn. The **prep'd. Na aluminate** block is uniform and the dissoln. time in wastewater is predictable. The block also has an insol. outer **layer** which is convenient for easy handling and storing. Thus, 32.7 kg of **Na aluminate soln.** contg. 20% Na<sub>2</sub>O and 25% **Al<sub>2</sub>O<sub>3</sub>** was boiled in a tank at 117.degree. initially and concd. for approx. 2 h until reaching 134.degree. b.p. The concd. **soln.** was passed through a 3.6-cm diam. outlet of the tank for 2 min, poured into a mold (length 60, width 30, and thickness 16 cm) and cooled to 112.degree. after 30 min. Then, addnl. 0.25 kg of **Na aluminate** (particle diam. .gtoreq. 1 mm, .gtoreq.85%) was seeded over the surface of the cooled molded **soln.** The resulting **soln.** was heated to 125.degree., set within 1 h, and then was fully set by cooling for 3 h. The resulting block removed from the mold was cooled further at room temp. and contained 28% Na<sub>2</sub>O and 33% **Al<sub>2</sub>O<sub>3</sub>**. A 25 kg **Na aluminate** block was immersed and gradually dissolved into a pH 2.5-3.0 wastewater stream at 2050 L/min in channels leading to 40,000 gal settling ponds. The **prep'd. Na aluminate** block was fully dissolved in 6 h and the resulting effluent into the settling ponds had a pH 6.4-7.0.

IC ICM C01F007-04  
 ICS B01D009-02; C02F001-68  
 CC 60-2 (Waste Treatment and Disposal)  
 Section cross-reference(s): **49**  
 ST **sodium aluminate** block wastewater treatment;  
 industrial acidic wastewater neutralization  
 IT Molding  
 (of **sodium aluminate**, for wastewater treatment,  
 concn. and seeding and crystn. for)  
 IT Wastewater treatment  
 (neutralization, of acidic effluent, **sodium aluminate**  
 block for, **prep'n.** of)  
 IT 11138-49-1, **Sodium aluminate**  
 RL: PROC (Process)  
 (for **neutralization** of acidic wastewater from lagoon)

L80 ANSWER 6 OF 10 HCA COPYRIGHT 2003 ACS on STN  
 94:124070 Water-soluble basic aluminum salt **production**. (Sumitomo  
 Aluminium Smelting Co., Ltd., Japan; Asahi Kagaku Kogyo K. K.). Jpn.  
 Kokai Tokkyo Koho JP 55140718 19801104 Showa, 7 pp. (Japanese). CODEN:  
 JKXXAF. APPLICATION: JP 1979-45914 19790413.

AB An acidic compd. is partially neutralized by slow addn. of less than an equiv. of an basic compd., either or both being an Al compd., at -30.degree. to 10.degree. but to contain .gtoreq.5% **Al<sub>2</sub>O<sub>3</sub>** and to form a **gel**, and heated at 40-100.degree. to dissolve the **gel**. The **soln.** is readily filtrable from the residual **gel**. Thus, aq. AlCl<sub>3</sub> contg. 10.3% **Al<sub>2</sub>O<sub>3</sub>** 100 was mixed slowly with aq. **K aluminate** of K<sub>2</sub>O/Al<sub>2</sub>O<sub>3</sub> mol ratio 1.7 and contg. 0.1% **Al<sub>2</sub>O<sub>3</sub>** 47.8 parts both at -10 to -15.degree., heated at 60.degree. for 2 h (turbidity 390, 56, 22, and 11 after 0.5, 1, 1.5, and 2 h), and filtered to contain 10.2% **Al<sub>2</sub>O<sub>3</sub>** and basicity 50.3, vs. 9.7 and 47.1 when neutralized at 50-60.degree. (turbidity >1000) (very slow filtration).

IC C01F007-02

CC 49-5 (Industrial Inorganic Chemicals)  
 ST aluminum basic chloride manuf; potassium aluminate neutralization  
 IT 1327-41-9P  
 RL: PREP (Preparation)  
 (manuf. of water-sol., aluminum chloride neutralization by potassium aluminate in)  
 IT 11137-59-0  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with aluminum chloride in aluminum basic chloride manuf.)  
 IT 7446-70-0, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with potassium aluminum oxide, in aluminum basic chloride manuf.)

L80 ANSWER 7 OF 10 HCA COPYRIGHT 2003 ACS on STN  
 87:55204 Microbayerite. Ozaki, Hiromi; Yamane, Mamoru; Hiramatsu, Takanobu; Inoue, Yukio (Nippon Mining Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 51146393 19761215 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-69726 19750611.

AB Aq. Al salt or Na aluminate soln. is hydrolyzed in an ultrasonic field of >10 W/L of the soln. to obtain fine particles of bayerite useful for the manuf. of .eta.-Al2O3. Thus, 80 g Na aluminate was dissolved in water, filtered, placed in an ultrasonic field of 100 W at 50-5 kHz, mixed with concd. HNO3 to adjust its pH to 8.5, filtered after 2 h, washed with water, dried at 150.degree. for 4 h to obtain bayerite of surface area 120.7 m2/g, and calcined at 500.degree. for 3 h to give .eta.-Al2O3 having surface area 280.8 m2/g and pore vol. 0.214 mL/g with sharp distribution of pores of 15 .ANG. diam. In contrast, when it was not treated in ultrasonic field, noncryst. Al2O3 having surface area 271.3 m2/g and pore vol. 0.204 mL/g with broad distribution of pores of 25 .ANG. diam. was obtained.

IC C01F007-34  
 CC 49-3 (Industrial Inorganic Chemicals)  
 ST sodium aluminate hydrolysis bayerite; sound crystn bayerite  
 IT Sound and Ultrasound, chemical and physical effects (bayerite fine crystals formation in field of)  
 IT 1344-28-1P, preparation 20257-20-9P  
 RL: PREP (Preparation)  
 (manuf. of fine crystals of, ultrasonic irradn. in)  
 IT 11138-49-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (neutralization of, in ultrasonic field for bayerite microcrystals formation)  
 IT 1344-28-1P, preparation  
 RL: PREP (Preparation)  
 (manuf. of fine crystals of, ultrasonic irradn. in)  
 IT 11138-49-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (neutralization of, in ultrasonic field for bayerite microcrystals formation)

L80 ANSWER 8 OF 10 HCA COPYRIGHT 2003 ACS on STN  
 84:61937 Hydrated alumina. Kojima, Mitsuo (Nikki Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50104798 19750819 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1974-10955 19740128.

AB Aq. Na aluminate is neutralized with an

inorg. acid in the presence of tartaric acid or its salt. Thus, a **Na aluminate soln.** was mixed with Na tartrate and neutralized to pH 7 with HNO<sub>3</sub>. The ppt., when filtered, suspended in H<sub>2</sub>O at 50.degree., filtered, repeated twice more, dried at 120.degree. overnight, was 100% boehmite. A mixt. of gibbsite and boehmite was obtained without the tartrate.

IC C01F; B01J  
 CC 49-3 (Industrial Inorganic Chemicals)  
 ST boehmite; **sodium aluminate neutralization;**  
 tartaric acid aluminate  
 IT 87-69-4, uses and miscellaneous  
 RL: USES (Uses)  
 (boehmite **prepn.** in presence of from aluminate **soln**  
 .)  
 IT 1318-23-6P  
 RL: PREP (Preparation)  
 (**prepn.** of, by neutralizing aluminate **soln.** in  
 presence of tartaric acid)

L80 ANSWER 9 OF 10 HCA COPYRIGHT 2003 ACS on STN  
 84:19867 Homogeneous and fibrous hydrated **aluminum oxide**.  
 Horie, Chuichi; Hasegawa, Toshio; Suzuki, Hideyuki; Iwai, Takao; Kayama, Isao; Matsuda, Keizo; Fujita, Kazumi (Showa Tansan Co., Ltd., Japan).  
 Jpn. Kokai Tokkyo Koho JP 50062897 19750529 Showa, 3 pp. (Japanese).  
 CODEN: JKXXAF. PRIORITY: JP 1973-112830 19731009.

AB Aq. **Na aluminate** is heated in the presence of ethylene chlorohydrin (I). Thus, NaOH 1 and Al(OH)<sub>3</sub> 0.8 kg were dissolved in 3 l. H<sub>2</sub>O, mixed with I 2 kg, the **soln.** heated for 5 hr and filtered, and the ppt. washed and dried at 90.degree.. The yield was 700 g of hydrated **Al<sub>2</sub>O<sub>3</sub>** with sp. surface 330 m<sup>2</sup>/g.

IC C01F  
 CC 49-2 (Industrial Inorganic Chemicals)  
 ST alumina manuf chlorohydrin hydrolysis  
 IT 1344-28-1P, preparation  
 RL: PREP (Preparation)  
 (from **sodium aluminate**, by **neutralization**  
 with ethylene chlorohydrin)  
 IT 107-07-3, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (hydrolysis of, **sodium aluminate**  
 neutralization by, alumina by)  
 IT 1344-28-1P, preparation  
 RL: PREP (Preparation)  
 (from **sodium aluminate**, by **neutralization**  
 with ethylene chlorohydrin)

L80 ANSWER 10 OF 10 HCA COPYRIGHT 2003 ACS on STN  
 78:32169 Macroporous extruded **aluminum oxide** of high strength. Warthen, John L.; Briggs, Warren S.; Ciapetta, Frank G. (Grace, W. R., and Co.). Ger. Offen. DE 2214401 19721012, 20 pp. (German).  
 CODEN: GWXXBX. PRIORITY: US 1971-128422 19710326.

AB A NaAlO<sub>2</sub> **soln.** was neutralized with HNO<sub>3</sub> at 40.degree. to pH 8.5 to give an **Al<sub>2</sub>O<sub>3</sub>** ppt. which was dried at 104.degree. and granulated. The granules were powd. and partially calcined 3 hr at 649.degree.. H<sub>2</sub>O was added to a mixt. of 90% calcined and 10% uncalcined **Al<sub>2</sub>O<sub>3</sub>** powder of av. particle size 100 .mu. to give a paste which was extruded to 0.312-cm strands. The strands were dried at 104.degree. and calcined 3 hr at 649.degree..

IC C04B; B01J  
 CC 49-3 (Industrial Inorganic Chemicals)

ST aluminum oxide macroporous extruded; porous aluminum oxide  
IT 1344-28-1P, preparation  
RL: PREP (Preparation)  
(cellular, from sodium aluminate by neutralization and extrusion)  
IT 1344-28-1P, preparation  
RL: PREP (Preparation)  
(cellular, from sodium aluminate by neutralization and extrusion)

=> d L72 1-5 cbib abs hitind hitrn

L72 ANSWER 1 OF 5 HCA COPYRIGHT 2003 ACS on STN  
104:7793 Method of manufacturing gibbsite. Seigneurin, Laurent (Rhone-Poulenc Specialities Chimiques, Fr.). Eur. Pat. Appl. EP 155873 A1 19850925, 10 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL. (French). CODEN: EPXXDW. APPLICATION: EP 1985-400325 19850222. PRIORITY: FR 1984-3274 19840302.

AB A method of manufg. gibbsite with high sp. surface area is described. It consists of 3 steps. An alkali metal aluminate is reacted with HF at 5-95.degree.. The quantity of HF used is only 25-90% of the quantity necessary to neutralize the aluminate. The ppt. of  $Al(OH)_3$  thus obtained is cured for 0.5-10 h at 5-95.degree.. Finally the ppt. is filtered, washed and dried. Thus, 2400 mL soln. contg.  $Al_2O_3$ , and  $Na_2O$  1.5 mol was mixed with 2400 mL of HF soln. contg. 20 g HF/L. The HF content was 80% of the required quantity for neutralization of **Na aluminate soln.**  
The mixt. was stirred for 2 h at 20.degree.. The ppt. was filtered, washed with 4 L  $H_2O$  and dried at 60.degree.. Thus 124 g of the  $Al(OH)_3$  was obtained giving 79% yield of  $Al_2O_3$ . The sp. surface of the product was 90 m<sup>2</sup>/g.

IC ICM C01F007-14  
CC 49-3 (Industrial Inorganic Chemicals)  
IT 7664-39-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with **sodium aluminate**, in gibbsite prepn.)

L72 ANSWER 2 OF 5 HCA COPYRIGHT 2003 ACS on STN  
103:73343 Apparatus and method for continuous neutralization of an aluminate solution to form **gels**. Pearson, Alan; Fleming, Hubert L.; Larrousse, Mark F. (Aluminum Co. of America, USA). Eur. Pat. Appl. EP 147167 A2 19850703, 31 pp. DESIGNATED STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1984-308889 19841219. PRIORITY: US 1983-564291 19831222.

AB In a stirred reactor with a sparger mounted below the turbine stirrer (480-1000 rpm),  $Al_2O_3$  gel is manufd. continuously. A **Na aluminate soln.** with an **alumina** -to-caustic ratio of 0.5-0.8 and contg. caustic (reported as  $Na_2CO_3$ ) 50-150 g/L is neutralized with  $CO_2$  at 0-90.degree. for 4-6 min residence time. The product is pseudoboehmite with a surface area of 440-475 m<sup>2</sup>/g, crystal size 21-22 .ANG., wt. loss at 110.degree. 1.15-2.69%, wt. loss on heating from 110 to 1100.degree. 25.0-29.7%, and  $Na_2O$  content 0.01-0.19%. The final pH and reaction temp. are controlled to obtain a product with specified properties.

IC ICM C01F007-14  
CC 49-3 (Industrial Inorganic Chemicals)  
ST boehmite manuf; **sodium aluminate**

neutralization carbon dioxide  
IT 1344-28-1P, preparation  
RL: PREP (Preparation)  
(gel, manuf. of, sodium aluminate  
neutralization with carbon dioxide in)  
IT 1318-23-6P 20257-20-9P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(manuf. of, sodium aluminate neutralization  
with carbon dioxide in)  
IT 124-38-9, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization by, of sodium aluminate,  
for aluminum oxide gel)  
IT 11138-49-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, by carbon dioxide, for aluminum  
oxide gel)  
IT 1344-28-1P, preparation  
RL: PREP (Preparation)  
(gel, manuf. of, sodium aluminate  
neutralization with carbon dioxide in)  
IT 11138-49-1  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, by carbon dioxide, for aluminum  
oxide gel)

L72 ANSWER 3 OF 5 HCA COPYRIGHT 2003 ACS on STN  
84:19877 .gamma.-Alumina of high activity. Yamaguchi, Naomi; Iwaisako,  
Toshiyuki (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo  
Koho JP 50087997 19750715 Showa, 8 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1973-137057 19731208.  
AB Aq. Na aluminate is mixed with a halohydrin at room  
temp., heated above 50.degree., filtered, washed, dried, and calcined at  
400-700.degree. for >30 min to obtain .gamma.-alumina of pore vol. 2-7  
ml/g, sp. surface 370-470 m<sup>2</sup>/g, oil absorption 4-7 ml/g, bulk d.  
0.06-0.25, and mean diam. 1-6.mu.. Thus, 1 l. of a 1.35% Na  
aluminate soln. (Al<sub>2</sub>O<sub>3</sub>:Na<sub>2</sub>O = 1:1.144) was  
mixed with ClCH<sub>2</sub>CH<sub>2</sub>OH 19.8 g at 20.degree., and heated at 50.degree. for 1  
hr. The ppt. was removed, washed with 10 l. H<sub>2</sub>O, dried at 120.degree. for  
3 hr, and heated at 400.degree. for 4 hr. The properties listed above  
were 4.9, 390, 4.5, 0.10, and 5.0, resp.

IC C01F  
CC 49-3 (Industrial Inorganic Chemicals)  
ST sodium aluminate halohydrin neutralization;  
alumina high porosity  
IT 1344-28-1P, preparation  
RL: PREP (Preparation)  
(from sodium aluminate by neutralization  
with halohydrin)  
IT 1302-42-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with ethylene chlorohydrin, aluminum  
oxide by)  
IT 107-07-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(with sodium aluminate, aluminum oxide by)  
IT 1302-42-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with ethylene chlorohydrin, aluminum  
oxide by)

L72 ANSWER 4 OF 5 HCA COPYRIGHT 2003 ACS on STN  
84:19876 .alpha.-Alumina of large surface and small bulk density. Yamaguchi, Naomi; Iwaisako, Toshiyaki (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50087996 19750715 Showa, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1973-137056 19731208.

AB Aq. **Na aluminate** is mixed with a halohydrin at room temp., heated above 50.degree. filtered, washed, dried, and heated above 1000.degree. for >30 min to obtain .alpha.-alumina of sp. surface 10-100 m<sup>2</sup>/g, pore vol. 2-7 ml/g, oil absorption 2-4 ml/g, bulk d. 0.1-0.2, and mean diam. 1-7. $\mu$ .. Thus, 1 l. of a 1.35% **Na aluminate** soln. (Al<sub>2</sub>O<sub>3</sub>:Na<sub>2</sub>O = 1:1.144) was mixed with ClCH<sub>2</sub>CH<sub>2</sub>OH 19.8 g at 20.degree., and heated at 50.degree. for 1 hr. The ppt. was removed, washed with 10 l. H<sub>2</sub>O, dried at 100-150.degree. for 3 hr, and calcined at 1200.degree. for 3 hr. The properties listed above were 61, 4.5, 2.3, 0.15, and 4.2, resp.

IC C01F

CC 49-3 (Industrial Inorganic Chemicals)

ST alumina high porosity; **sodium aluminate** halohydrin neutralization

IT 1344-28-1P, preparation

RL: PREP (Preparation)  
(from **sodium aluminate** by neutralization  
with halohydrin)

IT 1302-42-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with ethylene chlorhydrin, aluminum oxide  
by)

IT 107-07-3, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(with **sodium aluminate**, aluminum oxide by)

IT 1302-42-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with ethylene chlorhydrin, aluminum oxide  
by)

L72 ANSWER 5 OF 5 HCA COPYRIGHT 2003 ACS on STN

84:19875 .delta.,.theta.-Alumina of large surface and small bulk density. Yamaguchi, Naomi; Iwaisako, Toshiyuki (Asahi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50087995 19750715 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1973-137055 19731208.

AB Aq. **Na aluminate** is mixed with a halohydrin at room temp., heated above 50.degree., filtered, washed, dried, and calcined at 700-1000.degree. for .gtoreq.30 min to obtain .delta.,.theta.-alumina of pore vol. 2-7 ml/g, sp. surface 100-370 m<sup>2</sup>/g, oil absorption 4-7 ml/g, bulk d. 0.06-0.26, and mean diam. 1-7  $\mu$ .. Thus, 1 l. of a 1.35% **Na aluminate** soln. (Al<sub>2</sub>O<sub>3</sub>:Na<sub>2</sub>O = 1:1.144) was stirred with 19.8 g ClCH<sub>2</sub>CH<sub>2</sub>OH, heated at 50.degree. for 1 hr, and cooled. The ppt. was removed, washed with 10 l. H<sub>2</sub>O, dried at 120.degree. for 3 hr, and calcined at 700.degree. for 3 hr. The properties listed above were 4.8, 370, 5.0, 0.09, and 4.7, resp.

IC C01F

CC 49-3 (Industrial Inorganic Chemicals)

ST chlorhydrin neutralization **sodium aluminate**  
; aluminum oxide high porosity

IT 1344-28-1P, preparation

RL: PREP (Preparation)  
(by **sodium aluminate** neutralization with  
halohydrin)

IT 1302-42-7

IT RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with halohydrin, aluminum oxide by)  
107-07-3, reactions  
IT RL: RCT (Reactant); RACT (Reactant or reagent)  
(with sodium aluminate, aluminum oxide by)  
IT **1302-42-7**  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(neutralization of, with halohydrin, aluminum oxide by)

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L84 ANSWER 1 OF 6 HCA COPYRIGHT 2003 ACS on STN  
136:343607 Processing of carbonaceous sludge from electrowinning of aluminum.  
Baranovskii, V. V.; Baranovskii, A. V. (Aktsionernoe Obschestvo Otkrytogo  
Tipa "Vserossiyskii Alyuminievo-Magnievyi Institut", Russia). Russ. RU  
2167210 C2 20010520, No pp. given (Russian). CODEN: RUXX7.  
APPLICATION: RU 1999-115190 19990713.

AB The carbonaceous sludge from wet cleaning of dust from Al-electrowinning  
cells contains dispersed particles of C, fluorides, cryolite, and  
**Al2O3** with .ltoreq.40% moisture, and is processed with  
neutralization of fluorides and cyanides as well as recovery of  
**Al2O3** and C. The C-contg. sludge is added to the charge contg.  
**Al2O3**, soda, and limestone for **Al2O3** prodn.,  
followed by heat treatment at >100.degree. in a furnace for sintering with  
combustion of C, formation of Na or K  
**aluminates**, and neutralization of sol.  
fluorides and cyanides. The limestone is added to promote  
formation of CaF<sub>2</sub>, 2CaO.SiO<sub>2</sub>, and CaF<sub>3</sub>.3CaO.2SiO<sub>2</sub> (cuspidine).  
The sintered product is leached for recovery of **Al2O3**,  
soda, and K<sub>2</sub>CO<sub>3</sub>. The process is suitable for recovery of .apprx.90% of Al  
and alkali metals contained in the starting materials, as well as for  
environmental benefits.

IC ICM C22B007-00  
ICS C01F007-38

CC 54-2 (Extractive Metallurgy)  
Section cross-reference(s): 67

ST aluminum electrowinning cell carbon sludge sintering; alumina  
recovery carbon sludge sintering leaching

IT 7429-90-5P, Aluminum, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)  
(electrowinning of; sintering of fluxed carbonaceous sludge from  
Al-electrowinning cells)

IT 584-08-7P, Potassium carbonate 1306-00-9P, Cuspidine 7789-75-5P,  
Calcium fluoride, preparation 10034-77-2P

RL: BYP (Byproduct); PREP (Preparation)  
(from sludge; sintering and leaching of fluxed C-rich sludge from  
Al-electrowinning cells)

IT **1344-28-1, Alumina, processes**

RL: EPR (Engineering process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(recovery of; sintering and leaching of fluxed C-rich sludge from  
Al-electrowinning cells)

IT **1344-28-1, Alumina, processes**

RL: EPR (Engineering process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(recovery of; sintering and leaching of fluxed C-rich sludge from  
Al-electrowinning cells)

L84 ANSWER 2 OF 6 HCA COPYRIGHT 2003 ACS on STN

104:212674 Removal of heavy metals from wastewaters. Herrmann, Volker; Imhof, Reinhold; Naegerl, Hans Dieter; Weyland, Franz (Giulini Chemie G.m.b.H., Fed. Rep. Ger.). Ger. Offen. DE 3438140 A1 19860424, 11 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1984-3438140 19841018.

AB Wastewaters, esp. from power plants and heating plants with flue gas scrubbers, are intensively mixed with an aq. Na aluminate soln. with  $\text{Na}_2\text{O}-\text{Al}_2\text{O}_3$  mol. ratio  $>1$ , and the heavy metal compds. ppt. at pH  $\geq 7$  and are removed from the water. Thus, 5 m<sup>3</sup> desulfurization plant wastewater with pH 6.5 was mixed with Na aluminate soln. with  $\text{Al}_2\text{O}_3$  content 19 wt.% and pH 14 to raise the pH to 7.3 and approx. 30 min later, in the presence of polyacrylamide 0.5 mg/L, a sludge had settled out leaving an effluent which could be discharged without further treatment.

IC ICM C02F001-62

CC 60-2 (Waste Treatment and Disposal)

IT Chlorides, uses and miscellaneous

Fluorides, uses and miscellaneous

Sulfates, uses and miscellaneous

Sulfites

RL: REM (Removal or disposal); PROC (Process)

(removal of, from flue gas desulfurization wastewater, coagulation and neutralization with sodium aluminate for)

IT Flue gases

(wastewaters from scrubbing of, heavy metal removal from, sodium aluminate neutralization-coagulation for)

IT Scrubbers

(wastewaters from, heavy metal removal from, sodium aluminate neutralization-coagulation for)

IT Metals, uses and miscellaneous

RL: REM (Removal or disposal); PROC (Process)

(heavy, removal of, from flue gas desulfurization wastewater, coagulation and neutralization with sodium aluminate for)

IT 9003-05-8

RL: PROC (Process)

(flocculant, in heavy metal removal from wastewaters by sodium aluminate neutralization-coagulation)

IT 7429-90-5, uses and miscellaneous 7439-89-6, uses and miscellaneous  
 7439-92-1, uses and miscellaneous 7439-95-4, uses and miscellaneous  
 7439-96-5, uses and miscellaneous 7439-97-6, uses and miscellaneous  
 7440-02-0, uses and miscellaneous 7440-43-9, uses and miscellaneous  
 7440-47-3, uses and miscellaneous 7440-50-8, uses and miscellaneous  
 7440-66-6, uses and miscellaneous

RL: REM (Removal or disposal); PROC (Process)

(removal of, from flue gas desulfurization wastewater, coagulation and neutralization with sodium aluminate for)

L84 ANSWER 3 OF 6 HCA COPYRIGHT 2003 ACS on STN

102:83403 Manufacture of oxidation-resistant carbon material.

(Mitsubishi Pencil Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59190266 A2 19841029 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-64554 19830414.

AB High temp. oxidn.-resistant C materials are manufd. by immersing

C material into an aq. Na aluminate soln.,

neutralizing the C material with acid, drying the material, and

then firing in an oxidizing atm. Heat-resistant  $\text{Al}_2\text{O}_3$  is filled

in the pores of the C materials and the materials are esp. useful as

electrodes, crucibles, and molds. Thus, a C material impregnated with

$\text{NaAlO}_2$  was neutralized with dil. HCl soln., dried, and fired at

1050.degree. to give a C material filled with **Al2O3**. The material had 5.1% loss by oxidn. at 1050.degree., compared with 9.3 % for that not treated with Na aluminate.

IC C04B035-52  
CC 57-8 (Ceramics)  
IT **1344-28-1**, uses and miscellaneous  
RL: USES (Uses)  
(impregnation with, in pores of carbon materials, for thermal oxidn. resistance)  
IT 7440-44-0, uses and miscellaneous  
RL: USES (Uses)  
(materials, molded, **alumina** impregnation in, for thermal oxidn. resistance)  
IT **1344-28-1**, uses and miscellaneous  
RL: USES (Uses)  
(impregnation with, in pores of carbon materials, for thermal oxidn. resistance)

L84 ANSWER 4 OF 6 HCA COPYRIGHT 2003 ACS on STN  
88:78920 Aluminum sulfate solutions. Deckelmann, Karl (Heraeus, W. C., G.m.b.H., Fed. Rep. Ger.). Ger. Offen. DE 2554218 19770825, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1975-2554218 19751203.

AB Aq. Al sulfate **solns.** for water purifn. or wastewater treatment are **made** by reacring H<sub>2</sub>SO<sub>4</sub>-contg. Al sulfate **solns.** with sufficient alk. Na aluminate **solns.** that the Al sulfate **solns.** obtained have an Al content corresponding to 15-70 g **Al2O3**/L and a Na content corresponding to 2-65 g Na<sub>2</sub>O/L. The starting **solns.** are waste **products**, and the alk. Na aluminate **solns.** contain .1toreq.5% (calcd. on the aluminate) K compds. and (or) .1toreq.5% Mg compds. The aq. Al sulfate **solns.** contain .1toreq.50 g free H<sub>2</sub>SO<sub>4</sub>/L.

IC C01F007-74  
CC 61-4 (Water)  
Section cross-reference(s): 60  
ST aluminum sulfate **manuf**; **sodium aluminate neutralizing**; alum coagulant water treatment  
IT Wastewater treatment  
Water purification  
(coagulation, aluminum sulfate **soln.** **manuf.** for)  
IT 10043-01-3P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(**manuf.** of, for water purifn. and wastewater treatment)  
IT **1302-42-7**  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**neutralization** by, of sulfuric acid-contg. aluminum sulfate **solns.**)  
IT **1302-42-7**  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**neutralization** by, of sulfuric acid-contg. aluminum sulfate **solns.**)

L84 ANSWER 5 OF 6 HCA COPYRIGHT 2003 ACS on STN  
67:35006 Adaptation of the Pedersen process to the ferruginous bauxites of the Pacific Northwest. Blake, Henry E., Jr.; Fursman, Oliver C.; Fugate, Arden D.; Banning, Lloyd H. Bureau of Mines Report of Investigations, No. 6939, 21 pp. (English) 1967. CODEN: XBMIA6. ISSN: 1066-5552.

AB The Pedersen process can be used to process ferruginous bauxites having a wide variation in SiO<sub>2</sub> content. The high Ti content of these materials does not affect the leachability of the Ca aluminate slags if extra CaO is added to **form** CaO.TiO<sub>2</sub>. Smelting with lime and coke at

1750.degree. in an elec. arc furnace **produced** Ca aluminate slags in which .gtoreq.80% of the **Al2O3** was leachable by **Na2CO3** **soln.** After a lime desilication of the **Na aluminate** leach liquors, **neutralization** of these **solns.** with **CO2** resulted in pptn. of an **alumina** hydrate pure enough for calcination to cell-grade **Al2O3**. Recoveries of **by-product** Fe averaged >90%, but it contained .apprx.1.0% P. A slag contg. 14% **SiO2** required a slower cooling rate than one contg. 7% **SiO2** for **formation** of high percentages of **sol.** **aluminates.** High-**SiO2** slags leached better at 23.degree. for long periods than at 65.degree. for shorter periods, but low-**SiO2** slags leached well by either method.

CC 54 (Extractive Metallurgy)

ST BAUXITES FERRUGINOUS TREATMENT; FERRUGINOUS BAUXITES TREATMENT; ALUMINUM PRODN; IRON RECOVERY

IT 7439-89-6P, **preparation** 7440-32-6P, **preparation**

RL: PREP (Preparation)

(from bauxite of Pacific Northwest by Pedersen process)

IT 1344-28-1P, **preparation**

RL: PREP (Preparation)

(from iron- and titanium-contg. bauxite of Pacific Northwest)

IT 1344-28-1P, **preparation**

RL: PREP (Preparation)

(from iron- and titanium-contg. bauxite of Pacific Northwest)